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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/600,208	07/12/2000	JOHANN ENGELHARDT	293.000218	7902

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EXAMINER

NGUYEN, THONG Q

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 10/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

Applicant(s)

09/600,208

ENGELHARDT ET AL.

Examiner

Art Unit

Thong Q. Nguyen

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2002 and 16 August 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17, 18, 22-29 and 31-39 is/are pending in the application.
- 4a) Of the above claim(s) 18, 26, 27 and 31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17, 22-25, 28, 29 and 32-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 11 July 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/16/2002 has been entered.

Response to Amendment

2. The present office action is made in response to the Amendment (Paper No. 15) filed by applicant on 7/11/2002.

Drawings

3. The addition of figure 6 to overcome the objection to the drawings as set forth in the previous office action has been approved by the Examiner.

4. As a result, the present application now contains a total of six figures labeled as figures 1-6 in which figures 1-3 are original figures filed on 7/12/200; figures 4 and 5 filed with the amendment of 2/26/2002; and figure 6 filed with the amendment of 7/11/2002.

Specification

5. The lengthy specification which was amended has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's

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cooperation is requested in correcting any errors of which applicant may become aware in the specification.

6. A substitute specification without the claims is required pursuant to 37 CFR 1.125(a) because the additions and/or cancellation made in the specification or amendments to the claims could lead to confusion and mistake during the issue and printing processes. See 37 CFR 1.125 and MPEP § 608.01(q).

A substitute specification filed under 37 CFR 1.125(a) must only contain subject matter from the original specification and any previously entered amendment under 37 CFR 1.121. If the substitute specification contains additional subject matter not of record, the substitute specification must be filed under 37 CFR 1.125(b) and must be accompanied by: 1) a statement that the substitute specification contains no new matter; and 2) a marked-up copy showing the amendments to be made via the substitute specification relative to the specification at the time the substitute specification is filed.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 17, 22-25, 28-29 and 32-39 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the

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relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

a) Each of claims 17 and 38 is rejected under 35 USC 112, first paragraph because the disclosure, as originally filed, does not provide support for the feature thereof "a focus of the zoom optical system remains at a location of said point-like source" which is newly-added to claim 17 (lines 7-8) and claim 38 (lines 7-8).

Applicant should note that the disclosure, as originally filed, disclose the movement of the illumination optical system (6) having lens for the purpose of adjusting the diameter of the illuminating light beam; however, the disclosure, as originally filed, does not disclose that the focus of the (zoom) lens remains in the location of the point-like source as recited in the newly-added features to the claims.

b) The remaining claims are dependent upon the rejected base claims and thus inherit the deficiencies thereof.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25 is indefinite because the claim depends upon itself.

Claim Rejections - 35 USC § 103

11. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

12. Claims 17, 24-25, 32-33 and 39 rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (U.S. Patent No. 5,184,012, of record) in view of Hara et al (Japanese reference No. 5-107037).

Yamamoto discloses a scanning microscope having an illuminating system for illuminating a sample. The illuminating system as described at columns 4-6 and shown in figures 1-3 comprises a beam expanding system (30) disposed on an optical light path from a laser source (see the prior art as described at column 1 and shown in figure 5) and a scanning system (34 and 35) for scanning the illuminated light beam on the sample (A). The beam expanding system (30) as described at column 5 and shown in figure 3A will expand the illuminating diameter for matching with a particular objective lens used in the scanning microscope (see also column 6 and fig. 2 which discloses the interchangeability of different objective lenses). It is also noted that in the embodiment described at column 5 and shown in figure 3A, the beam expanding lens system is a zoom lens system in which the first lens element (41) acts as an additional lens having a fixed focal length for coupling the light from the laser source, and the second and third lens elements (43, 42), which in combination having a variable focal length, are movable along the illuminated path. As a result, the collimation in the light beam exits from the beam expanding lens system will expand as a function of the focal length ratio between the fixed lens and the movable lenses. With regard to the feature concerning the adjustment in the beam diameter of the illuminating beam being automatically in response to a particular objective lens

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being used, such a feature is also disclosed by Yamamoto as can be seen in column 4, lines 35+ and column 5, lines 45+. With regard to the feature that the scanning microscope is a so-called "multiphoton" scanning microscope, such feature is considered as an intended use of the scanning microscope because the claim does not provide any limitation for the making the scanning microscope as the so-called "multiphoton" scanning microscope.

As such, the system provided by Yamamoto meets all of the limitations recited in the pending claims except the feature relating to the kind of the light source used in the system. In other words, while Yamamoto discloses the use of a laser source, he does not explicitly disclose that the laser is in the form of a point-like light source as claimed. However, the use of an illumination system having a laser and optics wherein the laser is in the form of a point-like light source is known to one skilled in the art as can be seen in the system provided by Hara et al. In particular, the illuminating system provided by Hara et al comprises a semiconductor laser (2) which is a point light source and optics including a collimator lens (3) disposed in front of a beam expander (7). With regard to the feature that the focus point of the zoom lens system remains at a location of the point-like light source during a change in diameter of the light beam as recited in the claim 17, such a feature is considered as a new matter to the application and thus is not given a patentable weight. It is also noted that the front focal point of the lens system (3 and 4) of the device of Hara et al is in the location of the point-like light source (2) in case either the lens elements (7a or 7b) is moved along

the optical axis. Thus, it would have been obvious to one skilled in the art at the time the invention was made to utilize a laser in the form of a point-like light source with collimator lens as suggested by Hara et al for satisfying a particular design.

13. Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Hara et al as applied to claim 17 above and further in view of Takagi et al (U.S. Patent No. 5,140,458, of record).

The zoom beam expanding system as provided by Yamamoto and Hara et al meets all of the feature recited in the present claim 22 except he does not clearly state the movement of the movable lens element(s) is made by a motorized manner; however, the use of a motorized system for moving at least one lens for the purpose of changing the position of the at least movable lens with respect to other lens of a lens system used in an illuminating system of a microscope is clearly suggested to one skilled in the art as can be seen in the microscope having an illuminating system provided by Takagi et al. See column 3, lines 16+, for example. It is also noted that while applicant has used the term "video camera zoom" for the lens system in the present claim 23; however, since the claim has not provided any specific feature/limitation for the so-called "video camera zoom" and the operation of a zoom lens system, i.e., movement of at least one lens element with respect to other lens element(s) constituting the lens system, is similar in all of optical device; therefore, the use of a motorized system for moving at least one lens with respect to other lens elements as provided by

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Takagi et al meets the requirement/limitation of claim 23. Thus, it would have been obvious to one skilled in the art at the time the invention was made to utilize a motorized system as suggested by Takagi et al for moving at least one lens in a lens system disposed in the illuminating path of a microscope as that of Yamamoto for the purpose of adjusting the magnification thereof.

14. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Hara et al as applied to claim 17 above with or without Dabbs et al (U.S. Patent No. 5,054,926, of record).

The illuminating system for use with a scanning microscope wherein the illuminating system comprises a laser source and a beam expanding apparatus disposed after the laser source as provided by Yamamoto and Hara et al meets all of the features recited in claims 28-29 except that he does not state that the laser source can be in the form of a point light source (as claimed in present claim 28) or an optical fiber (as claimed in the present claim 29); however, such use of light source as claimed is merely that of a preferred embodiment and no criticality has been disclosed. The support for that conclusion is found in the present specification at pages 5-6 in which applicant has stated that the light source is a laser source. Further, the use of a point light source which is provided by a laser source or a laser diode or a combination of a light source with an optical fiber is clearly known to one skilled in the art as can be seen in the illuminating system provided by Dabbs et al. See column 4, lines 40+. Thus, absent any showing of criticality, it would have been obvious to one skilled in the

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art at the time the invention was made to utilize any suitable light source or a combination of available light sources and fiber for the purpose of providing a light beam which is in the form of a point light source or a collimating light beam.

15. Claims 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Hara et al as applied to claims 17 and 24 above and further in view of Kato (U.S. Patent No. 4,530,578, of record).

The illuminating system for use with a scanning microscope wherein the illuminating system comprises a laser source and a beam expanding apparatus disposed after the laser source as provided by Yamamoto and Hara et al meets all of the features recited in claims 34-36 except the feature concerning the use of an additional element in the form of a lens for the purpose of varying the light intensity. However, the use of lens systems each comprises at least one lens element and stop between a light source having fiber and a beam-expanding system for the purpose of varying the light intensity is known to one skilled in the art as can be seen in the illuminating system for use with a microscope provided by Kato. See columns 2-3 and figs. 3. It is also noted that an adjustment in the diameter of a stop for controlling the beam diameter passing through the stop is also within the level of one skilled in the art. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the illuminating system provided by Yamamoto and Hara et al by using an additional optics between the light source and the beam-expanding system as suggested by Kato

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for the purpose of varying the light intensity for the purpose of adjusting the light intensity near the edge of the illuminating beam.

16. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Hara et al and Kato as applied to claim 34 above with or without Kain (U.S. Patent No. 5,672,880, of record).

The combined illuminating system for use with a scanning microscope wherein the illuminating system comprises a laser source, a beam expanding apparatus disposed after the laser source and an additional system between for varying the light intensity near the edge of a light beam as provided by Yamamoto, Hara et al and Kato meets all of the feature recited in claim 37 except the feature concerning the use of an additional element in the form of a holographic element for the purpose of varying the light intensity. However, the use of lens system between a light source and a beam-expanding system wherein the lens element is a holographic lens element for the purpose of varying the light intensity as claimed is merely that of a preferred embodiment and no criticality has been disclosed. The support for that conclusion is found in the present specification at page 4 in which applicant has stated that the additional element is a conventional lens element or an annular stop. Further, the use of a holographic lens element between a light source and a beam-expanding system is clearly known to one skilled in the art as can be seen in the illuminating system provided by Kain. See columns 4-5. Thus, absent any showing of criticality, it would have been obvious to one skilled in the art at the time the invention was made to utilize any suitable

optical elements including a holographic lens element as suggested by Kain between the light source and the beam-expanding system for the purpose of adjusting the light intensity at the edge of the light beam.

17. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (U.S. Patent No. 5,184,012, of record) in view of Hara et al (Japanese reference No. 5-107037) and Dreessen et al (U.S. Patent No. 5,404,238, of record).

Yamamoto discloses a scanning microscope having an illuminating system for illuminating a sample. The illuminating system as described at columns 4-6 and shown in figures 1-3 comprises a beam expanding system (30) disposed on an optical light path from a laser source (see the prior art as described at column 1 and shown in figure 5) and a scanning system (34 and 35) for scanning the illuminated light beam on the sample (A). The beam expanding system (30) as described at column 5 and shown in figure 3A will expand the illuminating diameter for matching with a particular objective lens used in the scanning microscope (see also column 6 and fig. 2 which discloses the interchangeability of different objective lenses). It is also noted that in the embodiment described at column 5 and shown in figure 3A, the beam expanding lens system is a zoom lens system in which the first lens element (41) acts as an additional lens having a fixed focal length for coupling the light from the laser source, and the second and third lens elements (43, 42), which in combination having a variable focal length, are movable along the illuminated path. As a result, the collimation in the light beam exits from the beam expanding lens system will expand as a function

of the focal length ratio between the fixed lens and the movable lenses. With regard to the feature concerning the adjustment in the beam diameter of the illuminating beam being automatically in response to a particular objective lens being used, such a feature is also disclosed by Yamamoto as can be seen in column 4, lines 35+ and column 5, lines 45+. With regard to the feature that the scanning microscope is a so-called "multiphoton" scanning microscope, such feature is considered as an intended use of the scanning microscope because the claim does not provide any limitation for the making the scanning microscope as the so-called "multiphoton" scanning microscope.

As such, the system provided by Yamamoto meets all of the limitations recited in the pending claims except the feature relating to the kind of the light source used in the system. In other words, while Yamamoto discloses the use of a laser source, he does not explicitly disclose that the laser is in the form of a point-like light source as claimed. However, the use of an illumination system having a laser and optics wherein the laser is in the form of a point-like light source is known to one skilled in the art as can be seen in the system provided by Hara et al. In particular, the illuminating system provided by Hara et al comprises a semiconductor laser (2) which is a point light source and optics including a collimator lens (3) disposed in front of a beam expander (7). With regard to the feature that the focus point of the zoom lens system remains at a location of the point-like light source during a change in diameter of the light beam as recited in the claim 17, such a feature is considered as a new matter to the application and

thus is not given a patentable weight. It is also noted that the front focal point of the lens system (3 and 4) of the device of Hara et al is in the location of the point-like light source (2) in case either the lens elements (7a or 7b) is moved along the optical axis. Thus, it would have been obvious to one skilled in the art at the time the invention was made to utilize a laser in the form of a point-like light source with collimator lens as suggested by Hara et al for satisfying a particular design.

In regard to the feature missing from the art of Yamamoto and Hara et al in that the combined product does not state that another light source is used via a coupling-in manner. However, the use of an illuminating system having more than one light source in a microscope is clearly known to one skilled in the art as can be seen in the microscope having an illuminating system provided by Dreessen et al. In particular, in column 2 and fig. 1, they disclose an illuminating system having only one light source; however, in column 3 and fig.2, they disclose the use of a coupling-in unit for coupling two light beams from two light sources. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the illuminating system provided by Yamamoto and Hara et al by using a illuminating system having two light sources and a coupling-in unit as suggested by Dreessen et al for the purpose of increasing the intensity of light or alternatively for altering the type of different light sources to be used to meet different requirements of illumination.

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R s p o n s t o A r g u m n t s

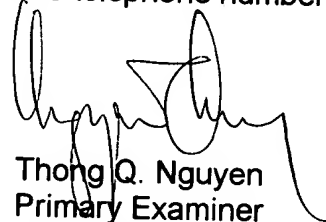
18. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thong Q. Nguyen whose telephone number is (703) 308-4814. The examiner can normally be reached on M-F.

 If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on (703) 308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

 Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.


Thong Q. Nguyen
Primary Examiner
Art Unit 2872

October 24, 2002